SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517 583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : DBMS (9F00301) **Course & Branch :** MCA

Year & Sem : II & III **Regulation:** R9

Question Bank (Descriptive)

UNIT–I : Database Systems

1. Define Database and DBMS. Explain the importance of database design 10M
2. What are the problems in file system data management? Explain in detail with relevant example. 10M
3. Define Data Model. Explain the importance of data models. 10M
4. Briefly explain basic building blocks of data modeling. 10M
5. Write briefly about business rules while data modeling. 10M
6. Describe the evolution of data models in detail. 10M
7. Define Data Vs Information. Explain the advantages of database management systems in detail. 10M
8. Write a short note on the following:
   a. Evolution of Data models 5M
   b. Degree of Data Abstraction 5M
9. Explain the differences between files system data management and database systems.10M
10. Explain the merits of Database management systems in detail with relevant example. 10M

UNIT–II : Entity Relationship Modeling

1. Explain Entity relationship model in detail. 10M
2. a. What are the challenges in the database design? 5M
   b. Explain the conflicting goal in database design. 5M
3. Write about Extended Entity Relationship Model. Explain in detail. 10M
4. Write the following terms in detail:
   a. Entity Clustering 5M
   b. Entity Integrity in detail 5M
5. Describe about various keys in relational model. Explain in detail. 10M
6. Write a brief note on data modeling checklist and flexible database designing. 10M
7. Draw an ER diagram for the relations Employee and Department with relevant relationships. 10M
8. Explain the following terms:
   a. Required and optional attribute 3M

b. Identifiers 2M
c. Composite identifier 2M
d. Simple and Composite attribute 2M

9. Write about the following in briefly:
   a. Entity super types 5M
   b. Entity sub types 5M
10. Explain the following:
   a. Specialization hierarchy 3M
   b. Inheritance 2M
   c. Subtype discriminator 2M
   d. Disjoin and overlapping constraints 3M

UNIT–III: The Relational Database Model

1. Explain different keys in detail. 10M
2. Explain about integrity rules in detail. 10M
3. What are relational set operators? Explain with example. 10M
4. Explain about data dictionary and system catalog in detail. 10M
5. Discuss about Codd's relational database rules in brief. 10M
6. Explain the following:
   a. Logical view of data 4M
   b. Table & their Characteristics 6M
7. What the things we have to follow while selecting primary key?
8. Explain the following briefly:
   a. Entity integrity 5M
   b. Referential Integrity 5M
9. Explain the differences between the following:
   a. Super key 2M
   b. Candidate key 2M
   c. Primary key 3M
   d. Secondary key 3M
10. Explain Intersect, difference, product, divide with relevant table.

UNIT–IV: Structured Query Language (SQL)

1. Explain various Data Definition Commands in details with syntax. 10M
2. Explain Data Manipulation Commands with syntax and examples. 10M
3. Explain SELECT query using various clauses with syntax and examples. 10M
4. Discuss about different advanced Data Definition Commands. 10M
5. Explain advanced SELECT Queries with examples. 10M
6. Write commands to create virtual tables and to show rows from virtual tables. 10M
7. Write queries using Relational Set operators and SQL Join operators. 10M

8. Write queries using Sub queries and correlated queries. 10M
9. Classify SQL Functions. Explain numeric functions with explanations. 10M
10. Explain Group By feature with HAVING Clause with example. 10M

UNIT–V: Normalization of Database Tables

1. What are the problems caused by Redundancy? Explain about Normalization and need for normalization. 10M
2. Define Functional Dependencies. Explain First, Second normal forms with relevant table. 10M
3. Explain about Third NF and BCNF with relevant table structure. 10M
4. Discuss about higher level normal forms. 10M
5. Explain the following terms:
   a. Functional dependencies 3M
   b. Fully functional dependencies 3M
   c. Transitive dependencies 4M
6. Discuss about schema refinement in database design. 10M
7. Explain the following: Multi-valued dependencies and fourth normal forms. 10M
8. Explain advanced normal forms with relevant examples. 10M
9. Explain the steps to improving the design. 10M
10. Discuss about renormalization in detail. 10M

UNIT–VI: Transaction Management and Concurrency Control

1. What is transaction? Explain the ACID Properties. 10M
2. Explain various locking methods with examples. 10M
3. Define ACID. Explain about scheduling in transaction management method. 10M
4. Define Concurrency control. Explain different concurrency control. 10M
5. a. What are the different types locking? 5M
   b. Explain Lock-based Concurrency control with diagram. 5M
6. Explain about concurrency control based on time-stamp ordering. 10M
7. Explain how to implement atomicity and durability. 10M
8. a. Define deadlock. 3M
   b. Explain the techniques to control deadlocks. 7M
9. Explain concurrency control with optimistic methods. 10M
10. Explain the terms:
    a. Shared lock 5M
    b. Exclusive lock 5M

UNIT–VII: Recovery System

1. Explain remote backup systems. 10M
2. Explain log-Based Recovery in detail. 10M
3. Explain about advanced recovery techniques. 10M
4. Explain about write-Ahead logging protocol for recovery algorithm. 10M
5. Describe the steps in crash recovery in ARIES. What are its advantages? 10M
6. How to handle failure with loss of nonvolatile storage. 10M
7. Explain about Buffer Management. 10M
8. Differentiate the following:
    a. Delaying database modification 5M
    b. Immediate database modification 5M
9. Explain the merits and demerits of remote backup 10M

UNIT–VIII: File Structure and Indexing

1. a. What is memory hierarchy? Explain in detail. 5M
   b. Explain Seek time, rotational delay and transfer time. 5M
2. Discuss the indexed sequential access methods (ISAM) 10M
3. Explain about RAID structure in detail with relevant diagrams. 10M
4. Explain for the following:
    a. Explain about tree structure indexing 5M
    b. Differentiate extendable Vs linear hashing. 5M
5. Explain the following:
    a. B^+ -Tree 5M
    b. ISAM 5M
6. Explain about tertiary storage access in detail. 10M
7. Explain the term:
    a. Ordered Indices 5M
    b. Hashing 5M
8. Differentiate extendable Vs linear hashing 10M
9. Explain about tree structure indexing 10M
10. Explain organization of records and Data dictionary. 10M

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